

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of

Applicant: Udayakumar et al.
Application No.: 10/620,516
Filed: July 16, 2003
For: HYDROGEN BARRIER FOR PROTECTING FERROELECTRIC
CAPACITORS IN A SEMICONDUCTOR DEVICE AND METHODS
FOR FABRICATING THE SAME

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

1. Pursuant to 37 C.F.R. 1.97 and 1.98, and in compliance with 37 C.F.R. 1.56, the Office's attention is directed to the patents, pending applications, publications and other information listed on the attached PTO-1449. A copy of each listed document is enclosed except for: (a) pending applications or (b) those previously cited or submitted to the Office in the following application(s) upon which this application relies for an earlier filing date under 35 U.S.C. 120:

Serial No.: _____

Filing Date: _____

Regarding any document, publication or other information for which a date is not given on the attached PTO-1449, Applicant(s) believe(s) the same may qualify as "prior" art to this application and should be treated accordingly, although Applicant(s) reserve(s) the right to contest the prior art status of any document, publication or information, should issue arise.

2. Regarding each listed document that is not in the English language, an English-language translation accompanies this Statement as indicated on the attached PTO-1449 or a concise explanation of the relevance of the document is set forth in the following document(s):

- (a) ____ Copy of each English language version of a search report indicating the degree of relevance found by the foreign office of each document being submitted from the search report.
- (b) ____ Attachment entitled "Concise Explanation of Relevance of Non-English Language Documents".

3. Pursuant to 37 C.F.R. 1.97(b) this Statement is being filed (one must be checked):

- (a) ____ Within 3 months of the filing date or date of entry into the National Stage.
- (b) X Before the mailing date of a first Office Action on the merits. If this Statement is not filed before the mailing date of a first Office Action on the merits, the required certification is given below or, in the absence thereof, the Office is authorized to charge the required fee set forth in 37 C.F.R. 1.17(p) to Deposit Account No. 20-0668 for consideration of this Statement.
- (c) ____ Before the mailing date of a first Office Action on the merits after a first or second submission under 37 C.F.R. 1.129(a).

d) ___ After the period set forth in 37 C.F.R. 1.97(b) but before the mailing date of either a final action or a notice of allowance.

(1) ___ The required certification is given below, or

(2) ___ Enclosed is a check covering the fee set forth in 37 C.F.R. 1.17(p) for consideration of this Statement, or

(3) ___ Charge the fee set forth in 37 C.F.R. 1.17(p) to Deposit Account No. 20-0668

(e) ___ After the mailing date of either a final action or a notice of allowance, but before payment of the issue fee. Petition hereby is made for consideration of this Statement and the required certification is indicated below.

(1) ___ Enclosed is a check covering the fee set forth in 37 C.F.R. 1.17(i)(1), or

(2) ___ Charge the fee set forth in 37 C.F.R. 1.17(i)(1) to Deposit Account No. 20-0668.

4. Certification (if applicable)

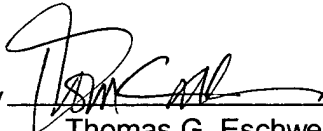
(a) ___ The undersigned hereby certifies that each item of information contained in this Statement was cited in a communication from a foreign patent office in a counterpart foreign application not more than 3 months prior to the filing of this Statement.

(b) ___ The undersigned hereby certifies that no item of information contained in this Statement was cited in a communication from a foreign patent office in a counterpart foreign application or, to the undersigned's knowledge after making reasonable inquiry, was known to any individual designated in 37 C.F.R. 1.56(c) more than 3 months prior to the filing of this Statement.

5. The Commissioner is hereby authorized to charge any additional fees or credit any overpayment to Deposit Account No. 20-0668.

Respectfully Submitted,

ESCHWEILER & ASSOCIATES, LLC

By  _____
Thomas G. Eschweiler
Registration No. 36,981

National City Bank Building
629 Euclid Avenue, Suite 1210
Cleveland, Ohio 44114
(216) 502-0600

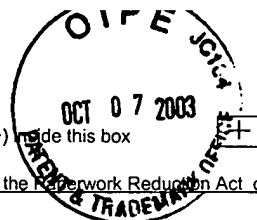
CERTIFICATE OF MAILING

I hereby certify that this paper (along with any paper or item referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as first-class mail in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Date: October 3, 2003

 _____
Christine Gillroy

Please type a plus sign (+) inside this box



PTO/SB/08A (08-00)

Approved for use through 10/31/2002. OMB 0651-0031

Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

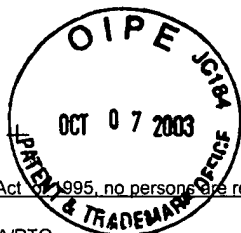
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

| | | | | | |
|--|---|----|--------------------------|---------------------|----------|
| Substitute for Form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary) | | | Complete If Known | | |
| | | | Application Number | 10/620,516 | |
| | | | Filing Date | July 16, 2003 | |
| | | | First Named Inventor | Udayakumar et al. | |
| | | | Group Art Unit | | |
| Examiner Name | | | | | |
| Sheet | 1 | of | 2 | Attorney Docket No. | TI-35996 |

| U.S. PATENT DOCUMENTS | | | | | | |
|-----------------------|-----------------------|----------------------|-----------------------------------|---|---|---|
| Exam. Initials* | Cite No. ¹ | U.S. Patent Document | | Name of Patentee or Applicant of Cited Doc. | Date of Pub. of Cited Doc. (mm-dd-yyyy) | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
| | | Number | Kind Code ² (if known) | | | |
| | AA | 5,452,178 | | Emesh et al. | 09/19/1995 | Entire Document |
| | AB | 5,972,722 | | Visokay et al. | 10/26/1999 | Entire Document |
| | AC | 6,090,697 | | Xing et al. | 07/18/2000 | Entire Document |
| | AD | 6,177,351 | B1 | Beratan et al. | 01/23/2001 | Entire Document |
| | AE | 6,242,299 | B1 | Hickert | 06/05/2001 | Entire Document |
| | AF | 6,261,967 | B1 | Athavale et al. | 07/17/2001 | Entire Document |
| | AG | 6,291,251 | B1 | Nam | 09/18/2001 | Entire Document |
| | AH | 6,423,592 | B1 | Sun | 07/23/2002 | Entire Document |
| | AI | 6,495,413 | B2 | Sun et al. | 12/17/2002 | Entire Document |
| | AJ | 6,528,386 | B1 | Summerfelt et al. | 03/04/2003 | Entire Document |
| | AK | 6,534,809 | B2 | Moise et al. | 03/18/2003 | Entire Document |
| | AL | 6,576,482 | B1 | Aggarwal et al. | 06/10/2003 | Entire Document |
| | AM | 6,611,014 | B1 | Kanaya et al. | 08/26/2003 | Entire Document |
| | AN | 2001/0034106 | A1 | Moise et al. | 10/25/2001 | Entire Document |
| | AO | 2001/0044205 | A1 | Gilbert et al. | 11/22/2001 | Entire Document |

| FOREIGN PATENT DOCUMENTS | | | | | | | |
|--------------------------|-----------------------|-------------------------|---------------------|-----------------------------------|---|---|---|
| Exam. Initials* | Cite No. ¹ | Foreign Patent Document | | | Name of Patentee or Applicant of Cited Doc. | Date of Pub. of Cited Doc. (mm-dd-yyyy) | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
| | | Office ³ | Number ⁴ | Kind Code ² (if known) | | | |
| | BA | | | | | | |
| | BB | | | | | | |
| | BF | | | | | | |
| | BG | | | | | | |
| | BH | | | | | | |

| OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS | | | |
|---|-----------------------|---|----------------|
| Exam. Initials* | Cite No. ¹ | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. | T ² |
| | CA | "FeRAM Tutorial", ALI SHEIKHOESLAMI and P. GLENN GULAK, A survey of circuit Innovations in Ferroelectric random-access memories, Proceedings of the IEEE, Vol. 88, No. 3, May, 2000, 3 pages, taken from the Internet at: http://www.eecg.toronto.edu/-ali/ferro/tutorial.html . | |
| | CB | "A survey of Circuit Innovations in Ferroelectric Random Access Memories", ALI SHEIKHOESLAMI and P. GLENN GULAK, Proceedings of the IEEE, Vol. 88, No. 5, May, 2000, pp. 667-689. | |
| | CC | "Generic CVD Reactor", CVD Basics, DANIEL M. DOBKIN, Dec. 7, 2001, 3 pages, taken from the Internet at: http://www.batn.t.com/nigmatics/semiconductor_processing/CVD_Fundamentals/introdu... | |
| | CD | "Physical Vapor Deposition", Cougar Labs, Inc., Dec. 7, 2001, 9 pages, taken from the Internet at: http://www.cougarlabs.com/pvd1.html . | |
| | CE | "The Hydrogen Content of Plasma-Deposited silicon Nitride", W. A. LANFORD and M. J. RAND, American Institute of Physics, J. Appl. Phys. 49(4), April, 1978, Pgs. 2473-2477. | |
| | CF | "Free Energy Model for the Analysis of Bonding in a-Si _x N _y H _z Alloys", Z. YIN and W. SMITH, J. Vac. Sci. Technol. A, Volume 9, No. 3, May/June, 1991, pg. 972. | |



Please type a plus sign (+) inside this box

PTO/SB/08A (08-00)

Approved for use through 10/31/2002. OMB 0651-0031

Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no person is required to respond to a collection of information unless it displays a valid OMB control number.

| | | | | | |
|---|---|----|---|--------------------------|------------------|
| Substitute for Form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary) | | | | Complete If Known | |
| | | | | Application Number | 10/620,516 |
| | | | | Filing Date | July 16, 2003 |
| | | | | First Named Inventor | Udayakumar t al. |
| | | | | Group Art Unit | |
| | | | | Examiner Name | |
| Sheet | 2 | of | 2 | Attorney Docket No. | TI-35996 |

| OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS | | | |
|---|-----------------------|---|----------------|
| Exam. Initials* | Cite No. ¹ | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. | T ² |
| | CG | "Comparison Between HCP CVD and PECVD Silicon Nitride for Advanced Interconnect Applications", J. YOTA, M. JANANI, L.E. CAMILLETTI, A. KAR-ROY, Q.Z. LIU, C. NGUYEN, M.D. WOO J. HANDER, and P. VAN CLEEMPUT, IEEE, 2000, pgs. 76-78. | |
| | CH | "Hydrogen Role on the Properties of Amorphous Silicon Nitride", F. DE BRITO MOTS, J.F. JUSTO and A. FAZZIO, Journal of Applied Physics, Volume 86, Number 4, August 15, 1999, pgs. 1843-1847. | |
| | CI | | |
| | CJ | | |
| | CK | | |
| | CL | | |
| | CM | | |
| | CN | | |
| | CO | | |
| | CP | | |

| | | | |
|--------------------|--|-----------------|--|
| Examiner Signature | | Date Considered | |
|--------------------|--|-----------------|--|

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹Unique citation designation number. ²Applicant is to place a check mark here if English Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231